Jameco Part number 143280

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Preface

With your latest project designed, prototyped, and functioning properly, you have to face the task of laying out and fabricating a printed circuit board (PCB). You could have that done by a PCB fabrication house, but that's just too costly for most of us. Fortunately, with access to a CAD or "draw" program and a laser printer, you can lay out and fabricate a professional quality PCB. Wouldn't it be nice if your computer could also help you with the laborious and error-prone task of drilling the component holes in that PCB?

Stepper motors are readily available today at relatively low cost, and most of us have a "spare" personal computer (or PC) lying about the house. Put those two together with some very smart software, and you can easily "computerize" the PCB drilling process.

This book begins with an overview of stepper motors. It discusses what they are, how they differ from conventional and servo motors, and how to control them. It investigates different methods to control stepper motors, and provides you with circuitry for a dedicated IC controller and a discrete component hardware controller.

With this foundation, you begin construction of an automated, PC-controlled PCB drilling machine that can drill as many as 500 holes in a 6 x 8" PCB with excellent repeatability and resolution. Called *Auto-XY*, it uses readily available electrical components, hardware, and construction materials -- no special purpose ICs or precision machined parts are used to create this precision device. In addition, *Auto-XY* doesn't require any extraordinary machinist or carpentry skills, but is ripe for customization based on your individual capability. Best of all, *Auto-XY* can be constructed for under $100 (hundreds less than the lowest cost commercial unit). A full-featured software application (on the companion floppy disk) rounds out the project.

With construction completed, you'll learn how to create the data file needed to drill a PCB, or how to use the Excellon drill file from your favorite CAD program to automatically create the *Auto-XY* drill data file. You'll then walk through an actual design layout, creating a PC design and board using two methods (manual using a Resist pen, and "automatic" using a commercially available Toner Transfer System). Finally, you'll see how the drill data file is determined from the layout, and then drill the PCB using *Auto-XY*. The book rounds out with a discussion of some possibilities for further enhancement of the project.

So, if you've always wanted to work with stepper motors and need a rig to drill your homebrew PC boards quickly and accurately, get out your soldering iron and follow along in *PC Hardware Projects, Volume 2!*

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PC Hardware Projects

V o l u m e 2

If you have always wanted to work with stepper motors, and need a rig to drill your own PC boards quickly and accurately, get out your soldering iron and follow along in **PC Hardware Projects, Volume 2!**

Fabricating a printed circuit board (PCB) can be done by a PCB fabrication house, which is too costly for most of us. With access to a CAD or "draw" program and a laser printer, you can lay out and fabricate a professional quality PCB on your PC. Stepper motors are readily available today at relatively low cost, and most of us have a "spare" PC lying about the house. Put those two together with some very smart software, and you can easily "computerize" your own PCB drilling process!

PC Hardware Projects, Volume 2 discusses stepper motors, how they differ from conventional and servo motors, and how to control them. It investigates different methods to control stepper motors, and provides you with circuitry for a dedicated IC controller and a discrete component hardware controller. Then **PC Hardware Projects, Volume 2** guides you through every step of the construction process of an automated, PC-controlled PCB drilling machine which can drill as many as 500 holes in a 6 x 8" PCB with excellent repeatability and resolution. With construction completed, you'll then walk through an actual design layout, creating a PC design and board. Finally, you'll see how the drill data file is determined from the layout, and then drill the PCB. With the help of the information and the data file disk included in **PC Hardware Projects, Volume 2**, you'll have transformed your PC into your very own PCB fabrication house!